Mohd Ridwan

9TH EnCON

International UNIMAS STEM Engineering Conference

October 24-27, 2016

"INNOVATIVE SOLUTIONS FOR ENGINEERING & TECHNOLOGY CHALLENGES"

SOARING UPWARDS

Co-Organized by:

www.conference.unimas.my/2016/encon

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Deputy Chief Minister of Sarawak's message

Assalamualaikum w.b.t and greetings to all.

It gives me great pleasure to extend a very warm welcome to International UNIMAS STEM 9th Engineering Conference 2016, EnCon2016. I am delighted to have you here to participate and to share knowledge in broad areas of engineering and technology related to **this year's theme as: Innovative** Solutions for Engineering Technology Challenges. This theme is timely as the Malaysian Government places great importance on Science, Technology, Engineering and Mathematics (STEM) education and has set the target ratio of **60:40** for Science and Technical versus Art stream. The Government is working hard to achieve this ratio.

Hence, in line with this vision, I would announce the objectives of this conference to be:

(i) Provide a platform for researchers, academicians, engineers, graduate students and industrial professionals to converge and share experiences and pave way to providing science and engineering solutions to technological challenges,

(ii) Promote collaboration and networking opportunities among the participants from various background in Science, Technology and Engineering and,

(iii) Push the limits in research and innovation by sharing ideas in technological advances and conceiving innovative solutions.

It is hoped that with events like this, there would be more encouragement, participation and involvement of researchers, academicians, engineers, graduate students and industrial professionals. This would promote a collective effort towards achieving 1.6 million technically skilled workforce in the local front (Sarawak) alone, set by TEGAS along with Sarawak Corridor of Renewable Energy (SCORE) by the year 2030.

I am confident that EnCon2016 would be a huge success and the participants would immensely benefit from exchanging scientific, technological and engineering ideas and solutions. It is intended that this conference would forge closer working relations and continued engagement of Science and Technology for the progress of the Nation.

Finally, I would like to congratulate Universiti Malaysia Sarawak (UNIMAS) and the EnCon2016 organizing committee for their huge effort and for shouldering responsibilities in making this event a memorable success.

YB Datuk Amar Abang Haji Abdul Rahman Zohari Tun Abang Haji Openg
Deputy Chief Minister of Sarawak

The Vice Chancellor's message

Assalamualaikum w.b.t and greetings to all.

Distinguished Delegates and all participants.
Welcome to International UNIMAS STEM 9th Engineering Conference 2016, EnCon2016. Perhaps it would be better for me to have said "welcome back" to the delegates and participants, as there might be many of us here have attended the conference in the previous years. This year marks UNIMAS' 9th year of hosting this conference.

The Malaysian government places a great importance in STEM. The National Council of Scientific Research and Development has estimated that the country needs approximately half a million of scientist and engineers by the year 2020; however, MOSTI has estimated that there would be a shortfall of about 236, 000 professionals in achieving this target. Hence, with this note of seriousness, inline with the theme of Innovative Solutions for Engineering Technology Challenges, the innovative solutions could be achieved through the establishment of a closer ties and collaboration between researchers, academics and industries. It is hoped that this event would be the platform in realizing these goals.

It is an honour for UNIMAS to once again be given this opportunity to host this conference in Sarawak as we strive to uphold our motto "Contemporary and Forward Looking". We have been successfully producing scientists and engineers over the years and continuously striving to provide innovative engineering workforce to meet the challenge of achieving the target of 1.6 million technical-skilled workforce in Sarawak - a huge number which was set by TEGAS along with Sarawak Corridor of Renewable Energy (SCORE) by the year 2030. The strong support from Sarawak State government, industries and professionals has made it possible for UNIMAS to be a platform for intellectual discourse between academia and industry players in one open forum.

Congratulations and thank you to the Faculty of Engineering, UNIMAS and the organizing committee for all the great effort in making this event a magnitude of success. This would not be possible without your dedication and commitment in ensuring the smooth running of this conference.

Finally, thanks to all delegates and participants for the support. It is hoped that this conference would be an exceptional and a valuable learning experience

YBhg Prof. Dato' Dr Mohamad Kadim Suaidi
Vice Chancellor
Universiti Malaysia Sarawak

Dean's message

Assalamualaikum w.b.t and greetings to all.

Once again, the Faculty of Engineering, UNIMAS, is proud to host 9th International UNIMAS STEM EnCon2016.

A warm welcome to all the participants and delegates. With the strong support of the elite members of the International Steering Committee who are prominent scholars, the participants and delegates are led through an exploration of this conference theme: Innovative Solutions for Engineering Technology Challenges. I believe that this conference would set a platform once again for scientists, engineers, academicians and industry experts in providing and exchanging scientific and innovative ideas and solutions that can guide us for the next decade and beyond.

I trust everyone who is part of this conference and who shares the goal to understand and to perform research on contemporary and cutting edge issues in order to be at the forefront of knowledge. Hence, it is my desire that this three-day conference, from 26th -28th October 2016, is able to establish new networks amongst the participants, and to break new ground in introducing new research agendas for further exploration.

To all participants, I am confident that this conference will succeed in meeting its objectives, given the illustrious background of our speakers and the rich mix of the audience with diverse experiences and worldviews.

Lastly, I would like to express my appreciation to the International UNIMAS STEM 9th Engineering Conference 2016, EnCon2016 organizing committee, the Faculty of Engineering and our supporting partners for their initiatives and commitment in spearheading this conference. To all participants, thank you for your support and hope we will see you again in our future EnCon. I wish you all participants a pleasant stay here in Kuching, Sarawak. Do enjoy the conference and this beautiful Land of the Hornbills.

Assoc. Prof Ir. Dr Al-Khalid Haji Othman
Dean, Faculty of Engineering, UNIMAS

Chairperson's message

Assalamualaikum w.b.t and greetings to all

It is a pleasure to welcome the participants and delegates to our prestigious International UNIMAS STEM 9th Engineering Conference 2016, EnCon2016, the flag ship event of the Faculty of Engineering, UNIMAS. The conference is organized into four major parallel events:

(i) Preconference Workshop On Design of Rereinforced Concrete and Steel Eurocode design 24-25 October 2016 (13 CPD/25CCD) – This has attracted more than 60 participants;

(ii) iSTEEx Open Category/iSTEEx School Category 26 October 2016 (Innovation competition)- (more than 70 participants);
(iii) Parallel Sessions (9.5 CPD/25 CCD)-26-27 October 2016 (more than 100 presenters including international presenters) where all accepted papers will be sent for publication in Scopus indexed journals and;
(iv) STEM Workshop- 26-27 October 2016 (more than 100 participants).

The success of our prestigious event is directly and indirectly resulted from the commitment and dedication of all members of the Faculty as the advisors and the organizing committee, strong support from partners, collaborators and sponsors to whom I convey my gratitude and appreciation. Special gratitude and appreciation goes to TEGAS as the main supporter and sponsor since 2014 as we promote STEM education as part of the event. This also follows as the agenda of our nation. Without their outstanding job and nearly a year of planning, we would not have such an excellent conference.

We hope that you will find the conference both enjoyable and valuable as a platform to collaborate and network among academics and disciplines. Please enjoy the conference while appreciating the natural beauty of Kuching, Sarawak.

Dr Norsuzailina Mohamed Sutan
Chairperson

International UNIMAS STEM 9th Engineering Conference 2016 (EnCon2016) will be held from October 24 to 27, 2016 in the beautiful city of Kuching, Sarawak. With the theme 'Innovative Solutions for Engineering and Technology Challenges',

The objectives of the conference are:

- To provide a platform for researchers, academics, engineers, industrial professionals as well as graduate students to share their experience and findings especially on the solutions for engineering and technological challenges
- Promote and enhance networking opportunities among the participants from various backgrounds in the field of engineering and technology.
- Push the limit knowledge of engineering and technology by sharing ideas and latest technological advances and innovative solutions.

INTERNATIONAL UNIMAS STEM ENCON2016
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Assistant Minister of Environment (Ministry of Resource Planning & Environment)
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Vice Chancellor, UNIMAS

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GENERAL INFORMATION

Registration Desk
Registration for the conference will be conducted at the Registration Desk located at Foyer. The registration desk will be opened during the following periods:

24th October 2016 (Monday): **0800 – 1700** (Pre-Conference Workshop)
25th October 2016 (Monday): **0800 – 1700** (Pre-Conference Workshop)
26th October 2016 (Wednesday): **0800 – 1700** (Conference + iSTEEx + STEM Education Workshop)
27th October 2015 (Thursday): **0800 – 1700** (Conference + STEM Education Workshop)

Lunch, Morning and Afternoon Tea Break
26th October 2016: Lunch will be served in The Coca, Casablanca and Blue Lagoon Restaurant, Level 3 and 4 whilst all tea breaks will be at the main hall foyer at Level 3 and Level 18.
27th October 2016: Lunch will be served in The Casablanca and Blue Lagoon Restaurant, Level 3 and 4 whilst all tea breaks will be at the main hall foyer at Level 3 and Level 18.

Name Badges
For identification and security reasons, delegates are requested to wear their name badges at all times during all conference sessions and at social functions.

Conference Secretariat
The Conference Secretariat room is located at Wind Suite, Level 3. Please visit the Secretariat room if you have any enquiries regarding the conference.

Parallel Oral Presentation
Your presentation is limited to 15 minutes. If your presentation exceeds the time limit you will be asked to stop to avoid encroaching into the next speaker's time slot and disrupting the programme schedule. 5 minutes of Question and Answer time has been scheduled at the end of your presentation.

Website
http://www.conference.unimas.my/2016/encon/

CCD/CPD/PDP Hours
24th – 25th October 2016: Pre-Conference Workshop *(Ref. no: CIDBHQ/B/2016/0015 with 25 CCD hours and IEM16/SWAK/255/W with6.5 CPD/PDP hours)*
26th – 27th October 2016: International UNIMAS STEM Engineering Conference (EnCon) 2016 *(Ref no: CIDBHQ/B/2016/0014 with 25 CCD hours and IEM16/SWAK/428/C with 9.5 CPD hours)*

INTERNATIONAL UNIMAS STEM ENCON2016
OPENING CEREMONY

"Innovative Solutions for Engineering and Technology Challenges"

Wednesday, 26th October 2016
Sarawak Chamber 3, Riverside Majestic Hotel, Kuching

0730 - Registration of participants, presenters for ENCON, iSTEEx and STEM workshop

0830 - Arrival of Delegates and Invited Guests

0850 - **Arrival of YBhg Prof Dato' Dr Mohamad Kadim Suaidi**
Vice Chancellor of UNIMAS

0855 - Arrival of YB Datu Haji Len Talif Salleh
Chairman of TEGAS

0900 - Arrival of YB Datuk Amar Abang Haji Abdul Rahman Zohari Tun Abang Haji Openg
Deputy Chief Minister of Sarawak

- National Anthem – '**Negaraku**'

- **Do'a Recitation**

- Video Presentation

- Welcoming Speech by YBhg **Prof Dato' Dr Mohamad Kadim Suaidi**
Vice Chancellor of UNIMAS

- Opening Speech by YB Datuk Amar Abang Haji Abdul Rahman Zohari Tun Abang Haji Openg
Deputy Chief Minister of Sarawak

- Conference Launching Ceremony

- MoU and MoA Exchange Session

- Souvenir Presentation

- End of Opening Ceremony

- VVIPs and VIPs proceed to officiate iSTEEx 2016 at Sarawak Chamber 1 and 2

- Press Conference at Deer Suite

1030 - Morning Tea Break

INTERNATIONAL UNIMAS STEM ENCON2016 PROGRAMME

First Day: 24th October 2016 (Monday)

Ref no: CIDBHQ/B/2016/0015: 25 CCD hours and IEM16/SWAK/255/W: 6.5 CPD/PDP hours

Pre-Conference Workshop

Time	Activity
0800-1730	Registration and Arrival of Participants Workshop Day 1 : An Introduction to Eurocode Design: Reinforced Concrete & Structural Steel Speaker: Ir Mohamad Salleh bin Yassin Venue: Lady and Deer Suite, Level 3

Second Day: 25th October 2016 (Tuesday)

Ref no: CIDBHQ/B/2016/0015: 25 CCD hours and IEM16/SWAK/256/W: 6.5 CPD/PDP hours

Pre-Conference Workshop

Time	Activity
0800-1730	Workshop Day 2 : An Introduction to Eurocode Design: Reinforced Concrete & Structural Steel Speaker: Assoc. Prof. Dr. Ahmad Baharuddin bin Abd. Rahman Venue: Lady and Deer Suite, Level 3 Closing Ceremony of Pre-Conference Workshop

Third Day: 26th October 2016 (Wednesday)

Ref no: CIDBHQ/B/2016/0014: 25 CCD hours and IEM16/SWAK/428/C: 9.5 CPD hours

Opening and Launching Ceremony

Time	Activity	
0800-0845	**Registration and Arrival of Participants**	
0845-0900	**Arrival of Guest of Honour and VIP**	
0900-1030	**Opening ceremony** **Venue: Sarawak Chamber 3, Level 3** • Arrival of YB Datuk Amar Abang Haji Abdul Rahman Zohari Tun Abang Haji Openg Deputy Chief Minister of Sarawak • National Anthem – '**Negaraku**' • Do'a Recitation • Video Presentation • **Welcoming Speech by YBhg Prof Dato' Dr Mohamad Kadim Suaidi** Vice Chancellor of UNIMAS • Opening Speech by YB Datuk Amar Abang Haji Abdul Rahman Zohari Tun Abang Haji Openg Deputy Chief Minister of Sarawak • Conference Launching Ceremony • Mou and MoA Exchange Session • Souvenir Presentation • End of Opening Ceremony • VVIPs and VIPs proceed to officiate iSTEEx 2016 at Sarawak Chamber 1 and 2 • Press Conference at Deer Suite	
1030	**Tea Break (Main Hall Foyer, Level 3)**	
	Sarawak Chamber 3, Level 3	**Sarawak Chamber 1 & Sarawak Chamber 2, Level 3**
1030-1120	**Session 1** **Keynote Speaker: YB Datu Haji Len Talif** **Title:** Sarawak STEM Initiatives: The 5-years plan	**i-STEEx Expo**
1120-1220	**Session 2** **Keynote Speaker: YBhg Dr Foo Chee Hung** **Title:** D3 an Innovation Solution for Affordable House in Malaysia	
1220-1400	**Lunch Break (Coca, Casablanca and Blue Lagoon Restaurant)**	

TECHNICAL SESSION A							
TIME	**Sarawak Chamber 3, Level 3** STEM Education	**Parallel Sessions**				**Lady Suite, Level 3**	**Sarawak Chamber 1 & Sarawak Chamber 2 , Level 3**
		WOK 1 & 2, Level 18 Civil Engineering	**WOK 3 & 4, Level 18** Electrical Engineering	**WOK 5 & 6, Level 18** Mechanical Engineering	**Deer Suite, Level 3** Mechanical Engineering		
1400 1420	Communicating Science to the Public EC057	Conceptualising 4Cs in Construction Project Team Integration EC039	Improving spectral efficiency in space communications using SRRC pulse-shaping technique EC007	Numerical Study of Frequency-dependent Seismoelectric Coupling in Partially-saturated Porous Media EC018	A Burner Characteristic For Activated Carbon Production EC154		
1420 1440	**FTK Students'** Performance in Mathematics: Comparison Between SPM and First Year Exam EC079	Consolidation of dredged marine soils with single and doubled drainage EC071	Comparison between Double Stranded DNA with Restriction Enzymes and Single Stranded DNA with Primers for Solving Boolean Matrix Multiplication EC003	Effects of Cigarettes Smoking on Pulmonary Function among University Students EC020	Similarities Of Lean Manufacturing Approaches Implementation In SMES Towards The Success: Case Study In The Automotive Component Industry EC171	**STEM Education Workshop 1** **Speaker**: YBhg AP Dr Al-Khalid Othman **Title:** Overview of Higher Education Selection Process, Intake Criteria & Requirement and Future Graduate Employability	**iSTEEx Expo**
1440 1500	Assessing Urban and Rural **Teachers'** Competencies in STEM Integrated Education in Malaysia EC115	Estimation of Shear Wave Velocity Using 1-D Multichannel Analysis of Surface Waves (MASW) and Shear Modulus of Peat EC094	Emission Dispatch Problem with Cubic Function Considering Transmission Loss using Particle Swarm Optimization EC008	Energy Consumption Analysis Based on Energy Efficiency Approach: A Case of Suburban Area EC022	Diffusion And Bonding Mechanism Of Protective - AL2O3 On Feeral Foil For Metallic Three-Way Catalytic Converter EC155		
1500 1520	The Dependency of Engineering Technology **Students'** Towards The Usage Of Calculator In Mathematics EC099	Critical factors in securing finance for PFI projects in Malaysia EC103	Neural Network Fitting Using Lavenberq-Marquardt Training Algorithm for PM10 Concentration Forecasting in Kuala Terengganu EC019	Virtual Mass of Any Shape of Body by using General Mapping Function EC047	Advanced Catalytic Converter In Gasoline Engine For Emission Control : A Review EC156		
1520 1540	A Comparison Study of **Students'** Performance in Pre and Post Result of A Mathematics Competency Test EC042	Dimensionality analysis of technical competency for Malaysian construction managers EC149	Design and analysis of 15 nm mosfets EC002	Effects of intermediary reservoir in a two-stage impedance pump EC060	Development of Wind Tunnel for Ultrafine Palm Oil Fuel Ash Separator EC078		

1540 1600	Academics And Learners' Perceptions On Blended Learning As A Strategic Initiative To Improve Student Learning Experience EC165	Application on building information modelling (BIM) in design and build (D&B) projects in Malaysia EC127	Implementation of Segmentation Scheme Based on Wavelet Transform in Multi-Spectral Fluctuation Patterns EC043	Sliding wear behaviour of carburized steel EC082	Study Of Cutting Edge Temperature And Cutting Force Of End Mill Tool In High Speed Machining EC124		
1600 1620	**Evening Tea Break (Main Hall Foyer, Level 3 and Level 18)**						
1620 1640		Engineering Behavior of Concrete With Recycled Aggregate EC011	A Non-Electrolytic-Capacitor Low-Power AC-DC Single-Stage SEPIC-Flyback LED Converter EC137	A study on relationship between carrying schoolbags and the prevalence of neck and back pain among 7 – 9 year old students EC119	Emission Treatment Towards Cold Start And Back Pressure In Internal Combustion Engine Against Performance Of Catalytic Converter: A Review EC157		**Closing Ceremony for iSteex Expo**
1640 1700		Review in formulating the standard form of contract for Industrialized Building System (IBS) construction approach in Malaysia EC005	SEU Rate in 90nm and 180nm of 6T SRAM at NEqO Orbit EC145	Active Heterogeneous CaO Catalyst Synthesis from Anadara granosa (Kerang) Seashells for Jatropha Biodiesel Production EC069	Improving Road Safety Of Tank Truck In Indonesia By Speed Limiter Installation EC158		
	End of Day 3						

Fourt Day: 27th October 2016 (Thursday)

Ref no: CIDBHQ/B/2016/0014: 25 CCD hours and IEM16/SWAK/428/C: 9.5 CPD hours

TECHNICAL SESSION B						
TIME	**Parallel sessions**					**Sarawak Chamber 3, Level 3**
	Lady Suite, Level 3 Chemical Engineering	**WOK 1&2, Level 18** Electrical Engineering	**WOK3&4, Level 18** Electrical Engineering	**WOK 5&6, Level 18** Mechanical Engineering	**Deer Suite, Level 3** Civil Engineering	
0830 0850	Investigation of Nanoparticles Dispersion in Sodium Hydroxide (NaOH) Solvent EC125	Photovoltaic versus micro-hydropower for rural non-grid connected areas of equatorial Sarawak EC166	Remote AC Power Control by Using Microcontroller EC044	Preparation of Nano-Scale Biopolymer Extracted from Coconut Residue and Its Performance as Drag Reducing Agent (DRA) EC122	Oil and grease (O&G) removal from commercial kitchen waste water using carbonised grass as a key media EC101	
0850 0910	Road Traffic Emission Analysis for Sustainable Traffic in Industrial Area: Case Study at Shah Alam Industrial Park EC061	ARIMA with Regression Model in Modelling Electricity Load Demand EC141	Photoplethysmogram Based Biometric Identification for Twins Incorporating Gender Variability EC062	Environmentally Benign Syntheses and Characterization of 4-Aryldihydropyrimidin-2(1H)-ones EC180	Study on Concrete Containing Recycled Aggregates Immersed in Epoxy Resin EC026	
0910 0930	Characterizing local Garden Croton ('pokok puding') leaf powder as low cost biomaterial for Chromium(VI) uptake EC102	Arrow-bot: A Teaching Tool for Real-Time Embedded System Course EC016	Web-Based Career Path Model For Human Resource Management EC015	Effect of Bottom Ash and Fly Ash as a Susceptor Material on The Properties of Aluminium Based Composites Prepared by Microwave Sintering EC163	Suitability of Coconut Shell Concrete for Precast Cool Wall Panel – A Review EC083	**STEM Education Workshop 2** **Speaker:** Ms Yusma Yusuf **Title:** Graduate Employability
0930 0950	Measurement of Streaming Potential in Downhole Application: An Insight for Enhanced Oil Recovery Monitoring EC041	CFD Modeling of a Pump as Turbine (PAT) with Rounded Leading Edge Impellers for Micro Hydro Systems EC077	Heart Abnormality Detection Technique using Photoplethysmogram Signals EC066	Level Of Bus Performance Based On The Relationship Between Distance And Travel Time Of Universiti Tun Hussein Onn Malaysia (UTHM) Bus Service EC051	A Comprehensive Review on the Effectiveness of Existing Noise Barriers commonly used in the Railway Industry EC093	
0950 1010	Aerated Steel Slag Filter System Performance Study For Pollutants Removal From Domestic Wastewater EC024	An Interactive Location Based App for Part Time Job EC090	Optical, Electrical and Structural Investigation on Different Molarities of Titanium Dioxide (TiO2) via Sol-Gel Method EC088	Microstructural effects of banana leaf on adhesion and self-cleaning behaviour EC182	Comparisons study of phosphate removal in unaerated and aerated steel slag filter system EC049	

1010 1030	Seasonal Variation of Criteria Pollutant in an Urban Coastal Environment: Kuala Terengganu EC021	Heart Disease Prediction System Using Weighted K-Nearest Neighbor Algorithm With Simplified Patient's Health Parameters EC048	Technical Performance of Palm-Based Oil as Alternative Power Transformer Oil Application EC174	The Control System Design For Keropok Keping Drying Machine EC132	A Review on Implication of Material Management to Project Performance EC114	
1030 1100	**Morning Tea Break (Main Hall Foyer, Level 3 and Level 18)**					
	Sarawak Chamber 1, Level 3			**Sarawak Chamber 3, Level 3**		
1100 1200	**Session 3** **Keynote Speaker: YBhg Prof Dr Azlan Adnan** **Title:** Innovative Rubber Products for Seismic Strengthening and Protection of Earthquake Resistant Buildings and Bridges			**1100 - 1230** **STEM Education Workshop 3** **Speaker:** Dr Raudhah Ahmadi **Title**: Outcome Based Education (OBE) Implementation in Faculty of Engineering, UNIMAS		
1200 1400	**Lunch Break (Casablanca and Blue Lagoon Restaurant)**					
	TECHNICAL SESSION C					
TIME	**Parallel sessions**					
	Sarawak Chamber 1, Level 3 Civil Engineering	**Sarawak Chamber 2, Level 3** Civil Engineering	**Deer Suite, Level 3** Electrical Engineering	**Lady Suite, Level 3** Electrical Engineering	**WOK1&2, Level 18** Mechanical Engineering	**WOK 3&4, Level 18** Mechanical Engineering	**WOK 5&6, Level 18** Chemical Engineering	**Sarawak Chamber 3, Level 3** Civil Engineering
1400 1420	Global Warming Potential of a Residential Building Construction in Malaysia using the Life Cycle Assessment (LCA) Approach EC140	Web Content Analysis On Sustainable Campus Operation (SCO) Initiatives EC173	Stability of Chlorine Termination on Ge(100) and (111) Surfaces EC080	A Design Of A 345-Kv Electric Power Transmission Line Interlinking Ramu And Rouna Grids In Papua New Guinea EC037	Applied TRIZ in Improving Productivity in Textile Industry EC046	Development Of Kek Lapis Sarawak's Machine: A Review EC138	HC-SCR: NOx Reduction using Mn and Cu Catalysts Impregnated in Coconut and Palm Kernel Shell Activated Carbon EC106	An Evaluation Of Signal Metering Application To Mitigate Roundabout's Unbalanced Flow Conditions : A Case Study In Kuching EC072
1420 1440	Workability and Compressive Strength for Concrete With Coconut Shell Aggregate EC161	The effectiveness Em mudball and banana peels for textile waste water treatment EC098	Clustered Coordinator SABTS (CC-SABTS) for beacon transmission in IEEE802.15.4 LR-WPAN EC033	PNG's energy sector and estimation of renewable energy resources in Morobe Province, Papua New Guinea: solar and wind power for new Umi township EC038	Physical and Mechanical Properties of Ni-Cr based composites with addition of solid lubricants produced through powder metallurgy process EC110	Microstuctural Characterisation Of Titanium Alloy Coated By Yzp- 30% Tio2 For Dental Application EC183	Differential Scanning Calorimetry (DSC) and Thermogravimetric Analysis (TGA) of Wood polymer nanocomposites EC111	1D Compressibility of DMS Treated With Cement-GGBS Blend EC075

1440 1500	Properties of Concrete Mixes with Carwash Wastewater EC162	Bioclimatic home cooling design for acceptable thermal comfort in Malaysian climate EC097	Pre-Lightning Strikes And Aircraft Electrostatics EC032	The Effect of Chamfering Structure towards the Design of Open Loop Resonator Bandpass Filter for Microwave Applications EC159	Development Of In-Pipe Robot D300: Cornering Mechanism EC109	Microstructure and mechanical properties of plasma sprayed Al2O3 – 13%TiO2 Ceramic Coating EC184	Physical, Mechanical, Thermal and Morphology Properties of Biodegradable Polymer Nanocomposites and Its Comparison EC112	Production and Characterisation of Ultrafine size Palm Oil Fuel Ash (POFA) originated from Bau, Lundu Palm Oil Mill EC108
1500 1520	Effectiveness of Mangrove Forest as Coastal Protection along the West Coast of Northern Peninsular Malaysia EC121	SWMM modelling of on-site stormwater detention system underneath urban road EC001	A Robust, 3-Element Traingular. Reflectorless, Single Beam Adaptive Array Antenna For Cognitive Radio Network: Interelment Distance Dependent Beam EC086	Asymmetrical Silicon-On-Insulator Rib Waveguide For Optical Directional Coupler EC153	Simple Arm Muscle Model for Oil Palm Harvesting Process EC128	Fire reactions of ultra-high performance fibre reinforced concrete due to heating and cooling EC189	Comparisons of the physicochemical and functional properties of commercially and traditionally processed sago starch EC169	The effect of aggregate condition during mixing on the mechanical properties of oil palm shell (OPS) concrete EC167
1520 1540	**Evening Tea Break (Main Hall Foyer, Level 3 and Level 18)**							
1540 1600	The Effect Of Binder And Waste Granular Materials On The Shear Strength And Shear Resistance Of Dredged Marine Soils EC070	Conceptual Model for Systematic Construction Waste Management EC095	Optimisation Of Neural Network With Simultaneous Features Selection And Network Pruning Using Evolutionary Algorithm EC087	High Gain of 3.1 – 5.1 GHz CMOS Power Amplifier for Direct Sequence Ultra-wideband Application EC107	Development Of Ankle Foot Orthosis (Afo) Using Pneumatic Artificial Muscle For Disabled Children EC129	Mapping of Tidal Energy Potential based on High and Low Tides for Sabah and Sarawak EC054	Palm oil mill effluent treatment using coconut shell – based activated carbon: Adsorption equilibrium and isotherm EC178	Drained and Undrained Triaxial Compression Tests on Cement Stabilized Tropical Fibrous Peat of Sarawak EC168
1600 1620	TRMM Satellite Algorithm Estimates to Represent the Spatial Distribution of Rainstorms EC085	Dimensional Hydrodynamic Flood Routing Analysis on Flood Forecasting Modelling for Kelantan River Basin EC134	Optimisation of electrospinning parameter for Poly(L-lactic) acid (PLLA) electrospun nanofiber EC113	-	Development Of Hand Grip Assist Device Control System For Old People Through Electromyography (Emg) Signal Acquisitions EC131	-	Adsorption of colour, TSS and COD from palm oil mill effluent (POME) using acid-washed coconut shell activated carbon: Kinetic and mechanism studies EC179	Screening of Geomechanical Risks for Malaysian Development Field EC120

1620 1640							Effects of Swirl Bubble Injection on Mass Transfer and Hydrodynamics for Bubbly Flow Reactors : A Concept Paper EC009	
1640	**END OF CONFERENCE**							

INTERNATIONAL SCIENCE, TECHNOLOGY and ENGINEERING EXPO (i-STEEx) 2016 PROGRAMME

Time	Activity
0730-0900	Registration of Participants
0900-1000	iSTEEx Session Commence
1000-1030	Soft Opening by VVIPs
1000-1030	Morning Tea Break
1030-1230	iSTEEx Session Commence
1230-1400	Lunch Break
1400-1600	iSTEEx Session Commence
1600-1620	Evening Tea Break
1620-1730	Closing Ceremony for iSTEEx Expo • Speech by Prof Dr Kopli Bujang Deputy Vice Chancellor (Research & Innovation) • Presentation of Certificate for Judges • Presentation of Certificate for Participants • Prize giving ceremony ○ Open Category : Resilient Technology for Development ○ Best Award Presentation: ✓ **Vice Chancellor's Award** ○ School Category : Sustainability Through Recycling Innovation ○ Best Award Presentation ✓ TEGAS Award ✓ Azmar Engineers Sdn Bhd and Akhdan RNA Sdn Bhd Award • End of Closing Ceremony

Evaluation by Judges

Open Category: Resilient Technology for Development

Project	*Title, Author(s) and Affiliation*
OS001	*Palm Oil as Green Alternative Lubricant* *Muhamad Azwar Azhari, Muhammad Rohaizad bin Rodwan, Muhammad Fadzlan Farhan bin Musli, Ir Mohammad Hafiz bin Harun* *Universiti Teknikal Malaysia Melaka*
OS002	*Nature Inspired Off-Loading Microball Footwear for Diabetics-StepEase* *AP Dr Mariyam Jameelah Ghazali, Armin Rajabi Nasirabadi, Nadia Mohd Mustafah, Mohd Haidzir Abd Manaf* *Universiti Kebangsaan Malaysia (UKM)*
OS003	*Cascade Aerator: Pilot Project at Rumah Nur Kasih, Taiping on Removing of Iron and Manganese* *Prof Ir. Dr Mohd Nordin Adlan, Dr.Mohd Remy Mohd Arif Zainol, Rhahimi Jamil, Dr Aizat Abas, Dr Nurul Hana Mokhtar Kamal, Dr Nuridah Sabtu* *Universiti Sains Malaysia (USM)*
OS004	*Vision-Based Athlete Motion Analysis and Feedback System* *Daniel Tan Yong Wen, Ting Huong Yong, Simon Lau Boung Yew* *University College of Technology Sarawak (UCTS)*
OS005	*Control of E-Coli Growth Via Low Frequency Electromagnetic Fields (EMF) in Riverbank Filtration (RBF) System* *Prof Dr Ismail Abustan, Rossitah Binti Selamat, Prof Dr Mohd Rizal Bin Arshad, Dr Nurul Hana BintiMokhtar Kamal* *Universiti Sains Malaysia (USM)*
0S006	*Hybrid Thermolysis Coagulation (HTC) Process for Industrial Textile Wastewater* *Ang Tze Zhang, Dr Wong Yee Shian, Dr Ong Soon An, Dr Ho Li Ngee, Lau Yen Yie* *Universiti Malaysia Perlis (UniMaP)*
OS007	*Automated Schedulling Based on Plant Growth for Greenhouse Management System* *Ahmad Ashraf Bin Abdul Halim, Najmuddin Bin Hassan, Ammar Bin Zakaria, Asyraf Hakimi Bin Abu Bakar* *Universiti Malaysia Perlis (UniMaP)*
OS008	*Fast Response Robbery Report* *Nurim Zhafarina Binti Ahamad, Annurfatinah Bt Mohd Zain, Mohd Nasir Bin Mad Saat* *Universiti Malaysia Perlis (UniMaP)*
OS009	*High Toughness E-Rubber Balloon From Waste Rubber* *Nurul Izzati Muhamad Zakir, Siti Hasmah Shaik Abdul Wahab, Yeoh Pei Ching* *Universiti Malaysia Perlis (UniMaP)*
OS010	*Ultrasonic Integrated Laser Soldering (UiLS) Machine* *Dr Farazila Yusof, Mohamad Badrol Hisyam, Lai Kwong Yih, Tan Ai Ting* *Universiti Malaya*

School Category: Sustainability through Recycling Innovations
(* *denotes accompanying teacher*)

Project	Title, Author(s) and School
SS001	Auto Recycle Water Treatment Aquarium "Bright GAC FiTank" Jap Lee Chian, Nini Natasha Binti Majiri, Siti Nur Amira Aisyah Binti Azmi, Norazurah Jalil* *SMK Bako*
SS002	Long sleeved T-shirt Bag Anniescya Jenny Pang, Yuan Ming Yong* *SMK St Columba*
SS003	Mini Cuboid Trolley Martina Narty Anak Asey, Donald Anak Joseph, Vincen t Alvino Anak Ahsat, Chung Sze Meang* *SMK Lake*
SS004	The Future of Solar Energy Samuel Tan, Ahmad Danial, Chiew Chiaw Hui, Roziah Derasit* *SMK Padungan*
SS005	Easy Breezy (Portable Cooler Aid) Willy Liew Wen How, Pattrick Anak Pengiran, Nurul Shamimi Binti Roslan, Bibi Izzatul Sahima Bt Sheikh Rahimullah* *SMK Sungai Tapang*
SS006	Backpack Cum Desk Bong Zhang Wang, Fam Yun Hui, Yvone Kimberly Ak Mathew, Bong Sze Sze* *SMK Tun Abdul Razak*
SS007	Vegetable Cutter Machine Goh Qiao Yi, Angelina Mujan Ayub, Amelia Teo Xiu Ping, Muhamad Hanafi Bin Abdul Maulud* *SMK Lutong*

SS008	Fan Cleaner Machine Leslie Brangka, Awang Muhammad Faiz Iqmal Bin Awang Roslan, Naomi Bulan, Muhamad Hanafi Bin Abdul Maulud* *SMK Lutong*
SS009	Electrolysis Lamp Rafiena Chenda Anak Baja, Cathaleyn Cynthia Tipong Anak Tibu, Aqilah Nadhirah Binti Bakir, Muhamad Hanafi Bin Abdul Maulud* *SMK Lutong*
SS010	Flexi Magic Roller Delphina Tiong Ming Min, Amy Tiong Mii, Jane Lau Bi Yien, Francisca Lau Siew Hsia* *SMK Methodist Sibu*
SS011	The Tin Flatter Carrie Teo Hui Xin, Fam Enn Xii, Grace Duncan, Yuan Meng Yong* *SMK Saint Columba*
SS012	Nature's Cooking Amanda Bong Suk Kiun, Damien Royce Anak Edwin, Roberto Ga'a Anak Janot, Bibi Izzatul Sahima* *SMK Sungai Tapang*
SS013	Versatile Wiper Maxwell Melldy Anak Korek, Nur Hafiqah Binti Roslan, Low Yuan Ling, Chung Sze Meang* *SMK Lake*
SS014	Miracle Dust Cleaner Lawrence Tieng Shiaw Chong, Jenny Lau Xin Jie, Daniel Ting Chun Teck, Francisca Lau Siew Hsia* *SMK Methodist, Sibu*
SS015	"Ever Ready" Dispenser Dayang Nur Syazwanie Binti Abang Redzuan, Amir Firdaus Bin Mohd. Hasnain, Jong Kah Yin* *SM Sains Kuching*
SS016	Easy-Pack Andrew Ling Xian Hann, Phan Kang Bao, Tony Hii Siu Siong, Ting Siao Fong * *SMK Sacred Heart Sibu*
SS017	Pen Lighting Ramon Ting Zhi Yuan, Sim Kah Hou, Loh Jia Cheng, Chan Chiew Wair* *SMK Sacred Heart Sibu*
SS018	Mini Cable Savior Sia You Seng, Ling Zhe Heng, Liu Guan Sheng, Chan Chiew Wair* *SMK Sacred Heart Sibu*
SS019	E-Motorcycle Adam Bin Fabian, Sia Dng Kee* *Kolej Tun DatuTuanku Haji Bujang*
SS020	Green Pot Lau Bik Choon, Richmond Law Peng Hang, Collin Fong Hock Ling, Hii Siew Tung* *SMK Chung Hua Sibu*
SS021	3R-Power Pack Adrian Ling Di Yeuan, Lau Bik Sing, Ting Ming Yew, Choo Yih Teen* *SMK Chung Hua Sibu*
SS022	Thirst - Quencher Janet Tiong Tyng Tyng, Kong Wei Yek, Naomi Khoo Xin Yi, Lo Ming Jun* *SMK Methodist Sibu*
SS023	Recycling E-Waste: Build External Hard Disk from Used Hard Disk. Nurfitri Farahhanie Binti Yusuf, Izza Natasha Binti Fauzi, Nur Asyfadzilla Binti Sulaiman, Nor Azman Bin Tamit* *SMK Agama, Igan*
SS024	Go Green Pot Christine Yvonne Bede, Darren Arvin Singh, Amanda Danielle Laujang, Mariatul Hanis Abdullah* *SM ST Michael, Penampang*
SS025	Door Gap Stopper Gerald Anak Stephen, Chu YianYanq, Ng Yan Kai, Law Mea Tan* *SMK Datuk Patinggi Haji Abdul Gapor*
SS026	Vertiponic Hendrick Larsson Ak Jommy, Dayang Iman Nur Balqis Binti Awang Damit, Dexter O'neill Mcquinne Anak Don Donny, Pauline Umi Ak Edward Sumbang* *SMK Muara Tuang*
SS027	Oil Absorber Ball (OAB) Joyce Inya Ak Jose, Gretha Linetta Ak Gerald Doger Anding, Shane Anak Oliver, Junathan M. Tubilag* *SMK Muara Tuang*

SS028	3 In 1 Agricultural Priyathasyini A/P Kanan, Rebecca Lau Li Wei, Amy Arianne Binti Len, Edwin* *SMK St. Teresa, Kuching*
SS029	Solar Plant Bong Zhen Qiang, Tiong Ying Zhi, Chin Hau Zen, Fong Huan Nee* *SMK Jalan Arang*
SS030	Greach (Grab & Reach) Eiton Ng ZieTeng, Ng Yen Deh, Raynard Chew Zhen Lee, Wong Hee Ting* *SMK Jalan Arang*
SS031	Multi-water Robot Amos Yap Zhen Zhang, Morton Chong Kai Xiang, Jired Thian Loi Teck, Fong Huan Nee* *SMK Jalan Arang*
SS032	Multipurpose storage Shanen Jane Anak Eric, Dorothy Debbie Anak Misen, Kuan Thai Wund, Nur Syaifa Bt Sazali* *SMK Bau*
SS033	Pet House Susie Anak Gilheg, Fineli Anak Dominic, Saac Amos Anak Cyril, Nur Syaifa Bt Sazali* *SMK Bau*
SS034	Flood siren Trixie Madellina Anak Meckie, Franicrance Anak John, Ballistairv Anak Konsil, Nur Syaifa Bt Sazali* *SMK Bau*
SS035	Model of Mimei-124 (Mitosis & Meiosis) Liew Jie Hui, Emily Chong Chiaw Yik, Lo SiewYau, Chung Sze Meang* *SMK Lake*
SS036	Ultimate Electric Can Crusher Celine Pu, Jane Ling, Sareena Lim, Chung Choo Yian* *SMK St. Teresa, Kuching*
SS037	Wasteboatinator 3000 Amanda Ngu Teng Teng, Alya Binti Rafaie, Victoria Leong Kai Xin, Chung Choo Yian* *SMK St. Teresa, Kuching*
SS038	Flashlight Alda Wena Ak Peter, Jotham Lee Wen Zhan , Estee FatmacBinti Fariddy, Sh Norayain Osman Al-Edrus* *SMK Bandar Kuching No.1*
SS039	Table Lamp Emily Chai Haen Chiaet, Eunice Chang Shu Xiang, Sh Norayain Osman Al-Edrus* *SMK Bandar Kuching No.1*
SS040	Popcorn Maker Ho Hui Sin, Samantha Foo Kui Er, Sh Norayain Osman Al-Edrus* *SMK Bandar Kuching No.1*
SS041	Eco-Lamp Nazrin Bin Nawawi, Muhammad Azdy Haiqal Bin Muhammad, Azrul Aidi Philip, Mohd Nurhilmi Bin Jaidie, Kassidy Maran Anak Unan* *Kolej DPAH Abdillah*
SS042	From H2O to E David Ong Chun Haw, Hafiz Bin Aslan, Jovin Anak Chui, Alice Hii Pui Ling * *Sekolah Menengah Teknik Sejingkat*
SS043	Eco Friendly Mosquito Trap Afif Zakwan Bin Zain, Nur Syuhada Binti Marjane, Nurul Nabilah Binti Abdul Rahim, Nurmarziana Madhi* *SM Sains Kuching Utara*
SS044	Airadise (Air Humidifier) Yuki Azalina Bt Mohd Razip, Dayang Hurhaiza Bt Awang Norawi, Maybelle Thang Hui Yin, Nurmarziana Madhi* *SM Sains Kuching Utara*
SS045	Automated iron Faritz Shahmi Bin Faizal Ibrahim, Sharifah Ain Dayana Binti Wan Abdullah, Muhammad Arif Hafizuddin Bin Ahmad, Nurmarziana Madhi* *SM Sains Kuching Utara*
SS046	Can Crusher Farisha Hanny Binti Appendy, Norfarazila Binti Bakeri, Zarith Sofia Binti Zainudin, Fatimah Danielle Banan* *SMK Tun Abang Haji Openg*
SS047	Fusion Aquarium Aden Tsai Ming Hua, Andrew Sim Soon Lung, Chin Chin San, Jocelyn Wong Erh Yi* *SMK Petra Jaya*

SS048	Egg-gregate Mohammad Qisti Khairi Bin Mohammad Rizzuan, Mohd Faiez Ibraheem Bin Faridon, Muhammad Ikmal Bin Mohd Rizal, Nurul Fahimah Bt Jamaludin* *Kolej DPAH Abdillah*
SS049	Portable Coconut/Bamboo Charcoal Water Filter Muhammad Asyraf Bin Jafer Sadig, Siti Aisyah Munawirah Bt. Bujang, Nazrul Aizat Bin Nur Ashriel, Salmiah Bt Samsudin* *SMKA Tun Ahmad Zaidi*
SS050	Portable Vacuum Cleaner Muhammad Zaid Bin Rejab, Mohammad Haziq Hafiz Bin Mohammad Isham, Miers Harith Aiman Bin Suhaimi, Salmiah Bt. Samsudin* *SMKA Tun Ahmad Zaidi*
SS051	Light up the corridor with rain water Voon Boon Khang, Joel Hii Jun Jie, Hiew Lee Song, Tay Boon Ping* *SMK Batu Kawa*
SS052	Title: What if they had a life? Aslester Tok Jia Xian, Liew Kit Yung, Chong Mei Jin* *SMK Pending*
SS053	Mosquito Trap Deluxe Mohammad Zaki Bin Ran, Syarmilla Binti Muhammad Syafiee, Muhammad Zhariflqbal Bin Abdul Rahim, Hanizzah Binti Ali* *SMK Demak Baru*
SS054	Window Cleaning Clipper Venessa Anak Thomas, Andriane Edric Anak Edwin, Sharley Anak Runin, Radhiah Binti Ab Rahim* *SMK Tebedu*
SS055	Recycling projects Aashraf Daniel Bin Afendi, Masniah Binti Abdul Rahim* *SMK Bandar Samariang*
SS056	Flexi Bag (FB) Aleef Ar Raushan Bin Rassully, Victor Lee Sien, Muhamad Haikal Aiman Bin Jaya, Asreena Bt Abdul Rahman* *SMK St. Joseph, Kuching*
SS057	Magic Wiper Chang Yong Zhe, Finn Trystant Anak Jabu, Isaac Emmanuel Ak Creighton, Bong Nyu Kee* *SMK Paku*
SS058	Sustainable Eco-Friendly Water Filter Abiezer Shannio Ak Abeng, Imanuddin Bin Bujang, Kenny Ak Paschal, Irene Tan Lee Zung* *SMK St. Thomas, Kuching*
SS059	Hair Booms Haniff Bin Rosli Jee, Shahrul Azam bin Ali, Cornelius Houben anak Christopher, Norshamsiah bt Samsudin* *SMK Kota Samarahan*

List of Judges

1. Prof Ir Dr Andrew Ragai Henry Rigit (UNIMAS)
2. Dr Foo Chee Hung (CREAM CIDB)
3. Ir Dr Adeline Ng Ling Ying (Swinburne University of Technology Sarawak Campus)
4. Dr Charlie Sia Chin Voon (Swinburne University of Technology Sarawak Campus)
5. Dr Darrien Mah Yau Seng (UNIMAS)
6. Dr Lakshmanan a/l Gurusamy
7. Dr Melody Kimi (UNIMAS)
8. Dr Nazeri Abdul Rahman (UNIMAS)
9. Dr Noor Hisham Noor Mohamed (UNIMAS)
10. Dr Remy Rozainy Mohd Arif Zainol (USM)
11. Dr Sim Kwan Yong (Swinburne University of Technology Sarawak Campus)
12. Mdm Alice Wee Chiew Ang (JKR Sarawak)
13. Mr Hazmi Hijazi Abdul Halim (UNIMAS)
14. Mr Ng Liang Yew (UNIMAS)

Keynote Speaker
YB Datu Haji Len Talif Salleh

"Sarawak STEM Initiatives: The 5-years plan"

YB Datu Haji Len Talif received the Bachelor of Science (Forestry) from the Australian National University, Canberra, Australia in 1978. He is currently Assistant Minister in the Chief Minister's Office (promotion of technical education) and Assistant Minister for Environment, Sarawak. He was the General Manager of Sarawak Timber Industry Development Corporation (STIDC). During his tenure as General Manager, STIDC, he was directly involved as Chairman and Director in STIDC's subsidiary and associate companies dealing with hospitality, aviation, insurance, medical services, education and plantation, logistics and others. He was the Deputy Permanent Secretary, Ministry of Planning and Resource Management and Director of Forests, Sarawak. He was also the advisor for Sarawak Timber Association (STA), a member of the Board of Trustee of Malaysian Furniture Promotion Council (MFPC), an Alternate Board Member of Malaysian Timber Industry Board (MTIB) and as Secretary of Sarawak Higher Education Foundation (SHEF). As general manager of STIDC, he played a vital role in planning, controlling, coordinating, managing and developing the wood-based sector of Sarawak Timber Industry towards optimum and efficient utilization of timber resources by encouraging downstream processing and product diversification.

He was also actively involved in seminars and bi-lateral meetings both domestically and internationally especially on issues pertaining to the tropical forestry and forest industries. His involvement in international governmental and non-governmental organisations such as ITTO, Food and Agriculture Organisation (FAO), Timber Trade Federation, Great Britain (TTF), Commonwealth Scientific Industrial Research Organisation, Australia (CSIRO), Swedish International Development Agency, Sweden (SIDA), European Union and others have exposed him to wide range of issues both locally and internationally.

Abstract

Science, Technology, Engineering and Mathematics (STEM) Education in Sarawak aspires to encourage the application of science and technology as a medium to develop the economy, improve the physical standard and the harmony of lives of the people. STEM Education is important to produce human capital that are knowledgeable and skillful to fulfill the country's development plan especially for the Sarawak Corridor of Renewable Energy (SCORE). Therefore, it is important to concentrate the efforts and strengthen the quality of STEM Education that is meeting the international standards to ensure our people and our country are competitive globally.

The Sarawak STEM Initiatives plan is comprehensively covering various stakeholders namely the students, teachers, parents, community and industries with five key strategies: Human Capital Development & Human Resources, Programme and Module Development; STEM Facilities, Empowering STEM Research and Visibility, Promotion & Smart Partnerships. The initiatives produced herewith are expected to give positive impacts and is significant in the pursuance of quality STEM Education in Sarawak in the realization for achieving Sarawak as a developed nation in 2030.

Keynote Speaker
YBhg Dr Foo Chee Hung

"D3 an Innovation Solution for Affordable House in Malaysia"

Dr Foo Chee Hung is a researcher from the Construction Research Institute of Malaysia (CREAM) – a research arm under the Construction Industry Development Board Malaysia (CIDB). He is currently the Head of Consultancy and Technical Opinion Unit.

He obtained both his first (Environmental Engineering) and master (SHE Engineering) degree in The University of Malaya. He then further pursuit his PhD (Urban Engineering) in The University of Tokyo. His research interest is in sustainability, affordable housing, green building, building quality assessment, Industrialized Building System (IBS), and urban ecosystem.

He is a member of the Institution of Engineers Malaysia (IEM), and the GreenRE manager.

Abstract

The provision of adequate quality housing for the mass population has always been the major challenge for a rapidly developing country like Malaysia. As the country heads towards higher level of urbanization, it is expected to face accelerated demand on housing and the associated environmental impacts. Only by encouraging the development of more efficient buildings or through implementing a holistic construction approach that addressed right from the onset of the design stage, harmful environmental impact to the surroundings can be mitigated. This paper highlights the potential of applying flexibility – a design approach which has been widely adopted in the traditional construction – as an inherent design strategy for the modern urban mass housing. The proposed design strategy entails open plan that enable retrofit and reconfiguration to be made quickly, economically, and repeatedly, without involving excessive site labour, time, and cost; as compared to the currently adopted design strategy which is associated with rigid structure, interlocking plan, and predetermined function. It makes possible the creation of dwellings which may grow old yet without becoming obsolete; incorporating the latest design ideas and technologies, yet have a sense of history on the Malaysian housing design (the rumah kampung design); allowing the communities to live for generations, yet incorporating the potential of adaptation. By examining the background research and the fundamental design principles, the paper suggests that only dwellings with high degree of flexibility may enable the integration of dual aims and principles of affordability and sustainability in mass housing, thereby facilitating the movement of the country's construction industry towards mechanization, industrialization, and standardization.

Keynote Speaker
YBhg Prof Dr Azlan Adnan

"Innovative Rubber Products for Seismic Strengthening and Protection of Earthquake Resistant Buildings and Bridges"

Dr Azlan Bin Adnan is a Professor of Structural Earthquake Engineering at the Structural and Material Department, Faculty of Civil Engineering, Universiti Teknologi Malaysia (UTM). He is the Head for research group, **"Engineering Seismology and Earthquake Engineering Research" or e-SEER**. He pursued his B.Sc in Civil Engineering at California State University, Long Beach and his M.Sc in Structural Engineering at UTM. His Ph.D. degree was obtained through a joint program between UTM and Illinois Institute of Technology, Chicago, USA. He is a member of several international associations such as the Earthquake Engineering Research Institute (EERI) of United States and the Seismological Society of America (SSA). Currently, he is serving as the Vice President of Malaysian Structural Steel Association (MSSA).

Abstract

Malaysia is located in a stable Sunda Shelf with low to moderate seismic activity levels. However, it is surrounded by Indonesia and Philippine, which are close to active seismic faults. It is bordered to the west by the seismically active inter-plate boundary (subduction zone) between the Indo-Australian and Eurasian Plate and to the east of Sabah by the inter-plate boundary (subduction zone) between the Eurasian and Philippines Plate. Major earthquakes originating from these zones have been felt in the Malaysia and more significantly in Sabah and northern part of Sarawak. Seismic hazard assessment procedure is used to identify the potential consequences of the earthquake events to structures and infrastructures in the area. The consideration is a part of the earthquake resistant design requirement to obtain probable safety against earthquake hazards, which considers geological and seismological conditions, attenuation of earthquake wave propagation in base rock, specific acceleration time histories, and local soil conditions. Over the past decades, earthquake resistant design of building and bridge structures has been largely based on ductility design concept. The performance of the ductile structures during major earthquakes were normally unsatisfactory due to its philosophy to allow cracks and structural damages to the structures which may not be suitable for many public buildings such as hospitals and important bridges. Most structures were under designed below the required earthquake demand to reduce construction costs. More effective and reliable techniques for seismic design of structures based on seismic strengthening and protection concepts are desired. Among the techniques developed, the seismic base isolators and the tuned mass dampers using rubber are the most promising alternatives. It can be adopted for new and existing buildings and bridges as a part of earthquake resistant design requirement.

STEM EDUCATION WORKSHOP

DAY 1

STEM Education Workshop 1

YBhg Assoc. Prof. Ir. Dr Al-Khalid Haji Othman

"Overview of Higher Education Selection Process, Intake Criteria & Requirement and Future Graduate Employability"

DAY 2

STEM Education Workshop 2

Ms Yusma Yusuf

"Graduate Employability"

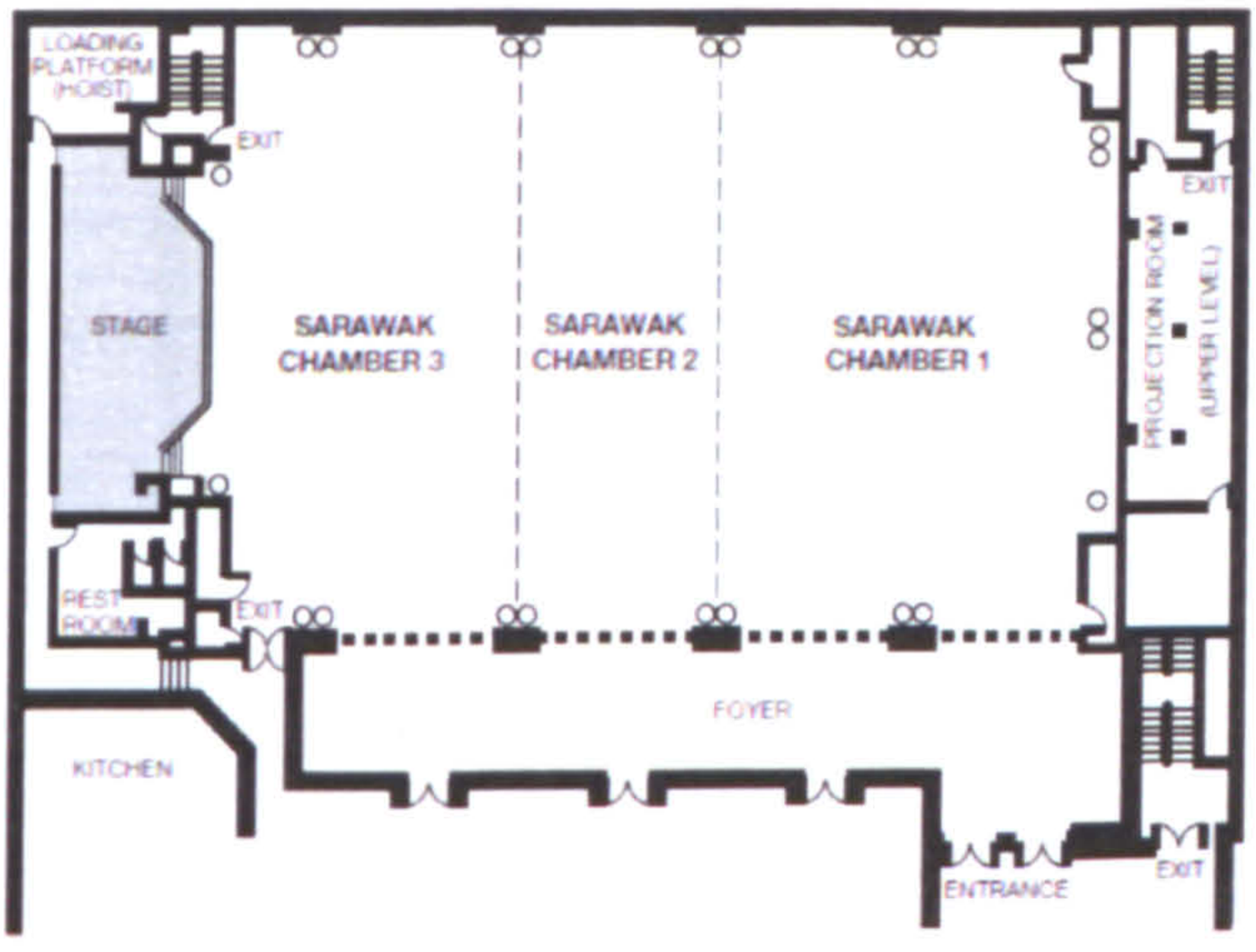
STEM Education Workshop 3

Dr Raudhah Ahmadi

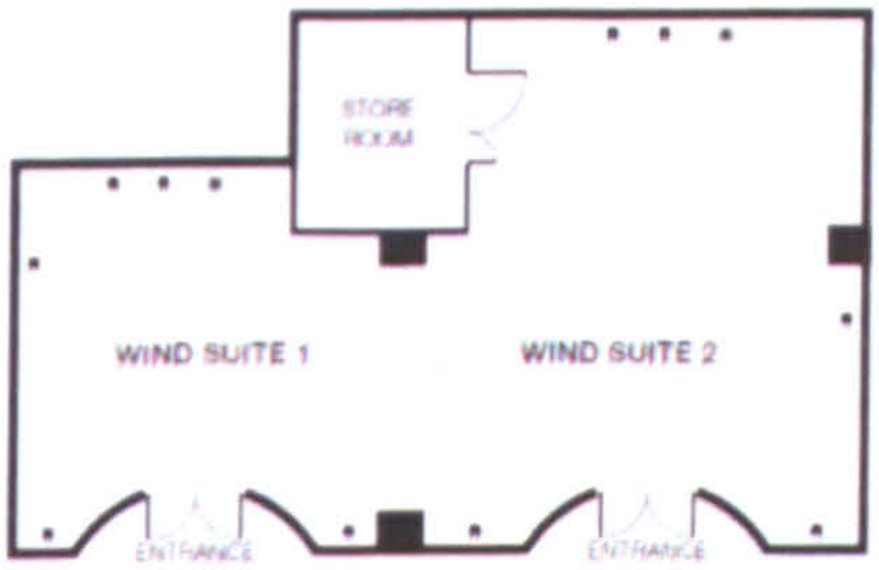
"Outcome Based Education (OBE) Implementation in Faculty of Engineering, UNIMAS"

FLOOR PLAN

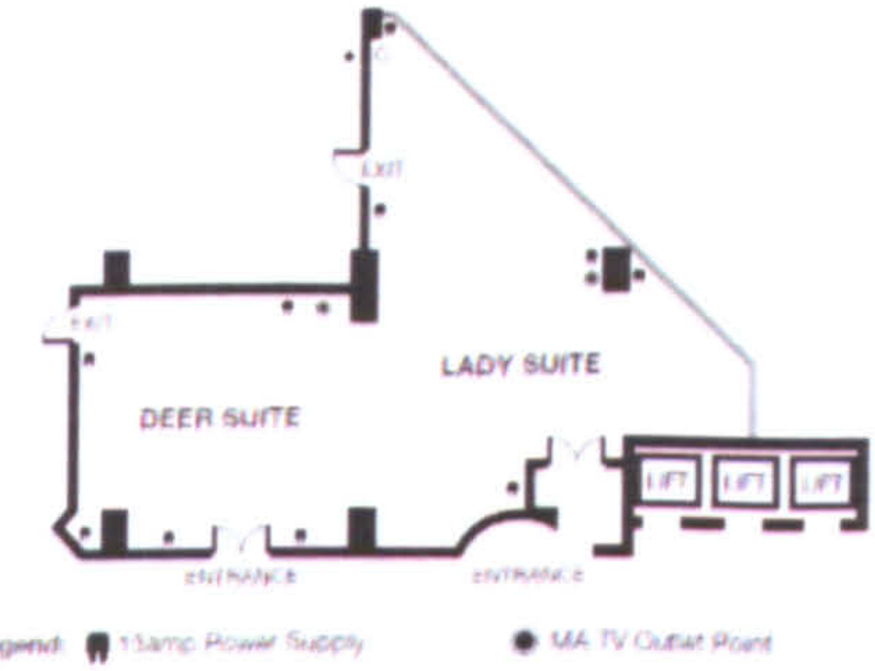
Sarawak Chamber | 3rd Floor



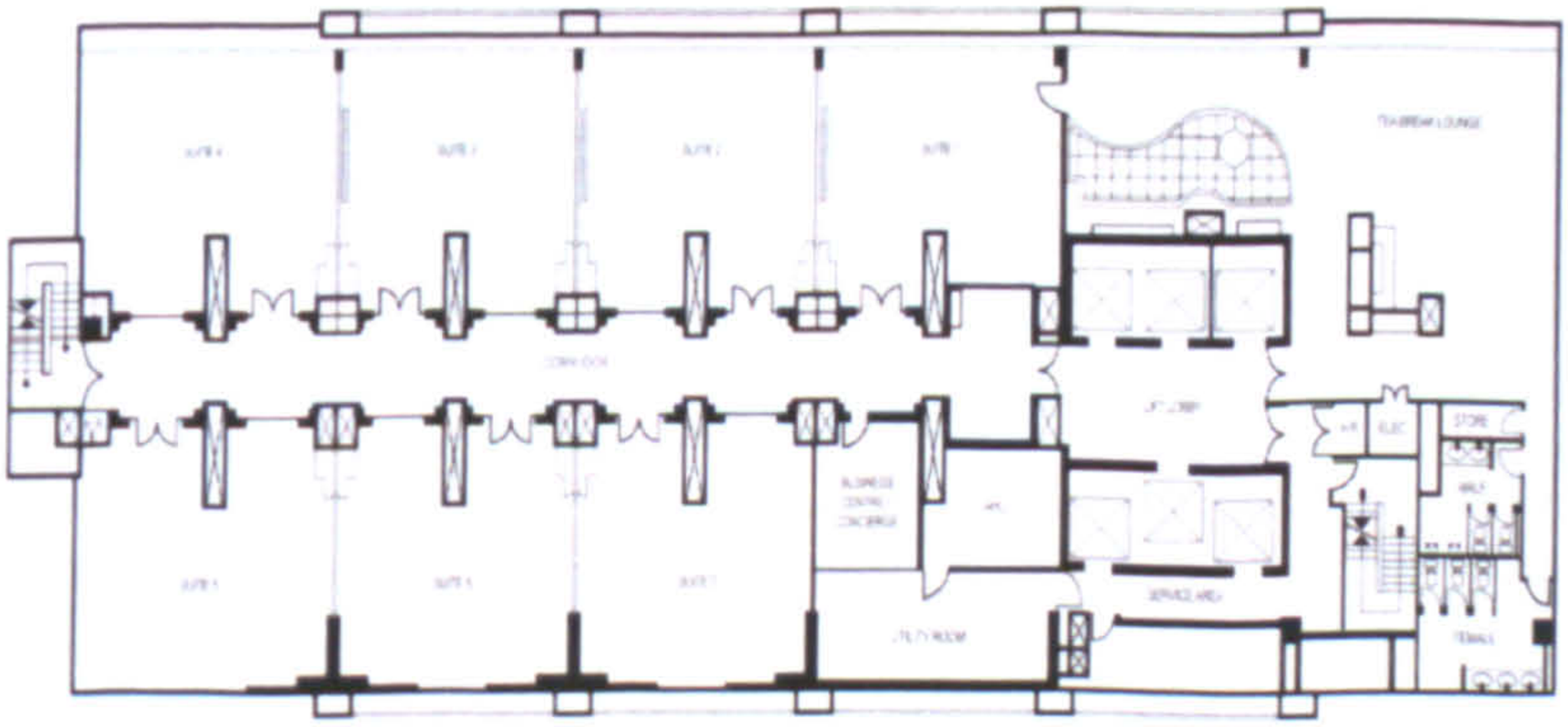
Wind Suited 1 & 2 | 3rd Floor



Deer and Lady Suites | 3rd Floor



Windows on Kuching (WOK) | 18th Floor



ACKNOWLEDGEMENT

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